Virtual Propeller Guards

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Comments on Docket Number USCG-2001-10163
Federal Requirements for Propeller Injury Avoidance Measures

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Our comments do not focus directly upon the proposed rule. Instead they bring attention to a method of reducing propeller injuries based on detecting people in the water near propellers. They also focus attention on how current laws create an incentive for marine drive manufacturers NOT to develop effective propeller guards.

Many claims are frequently raised against the use or requirement of conventional propeller guards including they:

1. Restrict Performance
2. Entrap people (Injuries may become more severe)
3. Increase zone of danger (Larger cross sectional area for impact)
4. Create unstable handling conditions
5. Increase drag
6. Reduce top speed
7. Increase fuel consumption
8. Increase draft of the vessel (water depth requirements)
9. Detract from the appearance of the drive
10. Not commercially available without the above problems
11. Not technically feasible, it can't be done (State of the Art defense)
12. Expensive

Note: Many of the objections raised are interrelated

Virtual Propeller Guard Concept

In 1997, we began to promote the use of sensors to detect people near (or soon to be near) an engaged (or soon to be engaged) marine propeller. These sensors are part of a system with decision making capability. When the system detects people in (or soon to be in) danger, it blows the horn, shuts down the drive, steers the vessel, flashes lights or take other appropriate actions to avoid injury to those in the water and those in the vessel. This approach could eliminate most or all objections raised above.

Sensors

Sensors currently detect presence of people in many applications including: military, law enforcement, border patrol, correctional institutions, parolees, surveillance, burglar alarms, OSHA machine guards, rescue operations, interactive toys and outdoor lighting systems. Sensors used to detect people or marine life in the water include swimming pool monitors, fish finders, military underwater security monitors, automatic marine life detection and identification systems and ship whale impact detection systems. Other water sensor applications include depth finders, aquarium web cams and remote controlled submersibles. With the wide range of existing applications and technologies, including recent developments in optical and intelligent sensors, it seems highly probable systems could be developed to detect people in the water near marine drives. Brunswick even recently received a U.S. Patent (#6,354,892) for an infrared sensor to detect people in the water.

Many propeller injuries occur to swimmers or skiers when the boat is at (or nearly at) rest. This is especially true in the case of houseboats which are the subject of this proposed regulation. Initially Virtual Propeller Guards could focus on protecting people when the boat is at (or nearly at) rest. Once systems are on the market, future models could be developed with additional sensors to detect people in the water when the boat is underway. Eventually sensors could also detect large marine life, floating or submerged debris and underwater obstacles. If a potential collision is detected, it would take appropriate actions to prevent or minimize severity of injuries to people in the water, people in the vessel, manatees and other large marine life while also protecting the drive and propeller.

Government Induced Industry Inertia

Since promoting the Virtual Propeller Guard concept online in 1997, we have added extensive information surrounding the resources and technologies available. However, the industry is not exploring these technologies. The government has actually created incentives for the industry NOT to develop propeller guards of any type.

Marine drive manufacturers have been protected from propeller injury lawsuits by a combination of a "State of the Art Defense" (effective propeller guards do not exist, therefore the federal government does not require them) and the Federal Boating Safety Act of 1971. FBSA-71 prevents states from creating boating regulations in conflict with those established by the federal government. Since the federal government does not require propeller guards, manufacturers cannot be successfully sued in state courts by individuals claiming the boat that injured them should have had a propeller guard. This is called federal preemption (state law cannot contradict federal law). Preemption in this specific situation is currently being challenged in the U.S. Supreme Court (Sprietsma v. Mercury Marine).

As it currently stands, if a manufacturer did install propeller guards and someone was injured they could be sued for a defective product. Plus they might be challenged for not retrofitting them to existing models in the field (for minimal cost or free). Additionally, if they came up with a good one, but did not actually install it, they would lose the "State of the Art" / FBSA-71 defense. Then they would be faced one of these three evils:

1. Install "good" propeller guards to avoid court problems, but possibly incur reduced sales due to higher boat costs.
2. Do nothing, but face a MUCH GREATER risk of losing propeller injury court cases.
3. Face state and/or federal regulations requiring propeller guards.

Drive manufacturers see the current status quo as the only safe square on the checkerboard. Any move and they fall into a bottomless pit. Propeller guard costs would have greatest impact on small low end boats (guard cost would be a larger percentage of overall boat cost). Small boats are the "bread and butter" of the industry. They have already lost ground to alternative activities: PWC's, camping, RV's, shore fishing, swimming, cable skiing, travel, vacations, etc. The industry depends on a few small boat owners working their way up into larger craft. Raising the price of small boats a few percent could upset the balance and drive the first of a series of nails into a coffin for the entire industry. As a result, current laws create a strong incentive for manufacturers NOT to develop effective propeller guards and no one is mentioning it.

Our position

We encourage further development of Virtual Propeller Guards. We also promote careful study of existing and proposed regulations to make sure they:

1. Actually do result in safer vessels
2. Do NOT discourage development of safety devices
3. Do NOT devastate the industry.

Thank you for allowing us to register our comments and
PLEASE SEE LIST OF REFERNCES ON THE NEXT PAGE
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Gary Polson
President
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References

We have posted several Virtual Propeller Guard presentations and papers online. They include numerous references to additional research and other resources helpful to those working in this field.

Virtual Propeller Guard online presentation
http://www.rbbi.com/invent/guard/propg/intro.htm

Reference Materials slide from the presentation above
http://www.rbbi.com/invent/guard/propg/ref/ref.htm

Propeller Guard Update 2002 and Virtual Propeller Guards
http://www.rbbi.com/invent/guard/propg/updates/2002/prop2002.htm

Sprietsma v. Mercury Marine
http://www.rbbi.com/invent/guard/propg/updates/2002/supreme.htm